

Product Information

STROMAL CELL-DERIVED FACTOR 1 β (SDF-1 β)/PRE-B CELL GROWTH STIMULATING FACTOR

Human, Recombinant
Expressed in *Escherichia coli*

Product Number **S 8406**

Product Description

Recombinant Human Stromal Cell-Derived Factor 1 β (SDF-1 β)/Pre-B Cell Growth Stimulating Factor (PBSF) is a 72 amino acid (~8 kDa) polypeptide expressed in *Escherichia coli*. This product is produced from a DNA sequence encoding a 93 amino acid residue precursor protein.^{1,2}

SDF-1 β and SDF-1 α were initially identified using signal sequence trap cloning.^{1,2,3} With this method, cDNAs have been cloned using mouse bone marrow stromal cell lines and human stromal cell lines as cytokines that support the proliferation of a stromal cell-dependent pre-B-cell line.^{1,2,3} SDF-1 is highly conserved among species with only one amino acid substitution between the human and mouse proteins and 92% homology.¹ SDF-1 β and SDF-1 α (together known as SDF-1/PBSF) are encoded by a single gene and arise from alternative splicing. The two proteins are identical except for the four amino acid residues that are present in the carboxy-terminus of SDF-1 β and absent from SDF-1 α . The amino acid sequence of SDF-1 identifies the protein as a member of the CXC family of chemokines (α subfamily) that lacks the ELR domain. Unlike other chemokine α and β subfamily members that cluster on chromosomes 4 and 17, respectively, the gene for SDF-1 has been mapped to chromosome 10q11.1.

SDF-1 functions as a pre-B cell growth-stimulating factor in the presence of IL-7 and a potent chemo-attractant for T-lymphocytes and monocytes, but not neutrophils.^{2,4} It is also a ligand for CXCR4 (fusin/LESTR) receptor that functions as a co-receptor for lymphocyte-tropic HIV-1 strains.^{4,5} By signaling through the receptor, SDF-1 may serve as an inhibitor of HIV-1 which utilizes the LESTR/fusin receptor as a point of entry.⁴ SDF-1, unlike other chemokine family members, has been found to be constitutively expressed in a wide variety of tissues including pancreas, spleen, ovary, and small intestine.^{1,2,3}

Reagent

Recombinant Human Stromal Cell-Derived Factor 1 β (SDF-1 β) is supplied as approximately 10 μ g of protein lyophilized from a 0.2 μ m filtered solution in 30 % acetonitrile, 0.1 % trifluoroacetic acid (TFA) containing 0.5 mg bovine serum albumin.

Preparation Instructions

Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS) containing 0.1 % human serum albumin or bovine serum albumin. Prepare a stock solution of no less than 50 μ g/ml.

Storage/Stability

Prior to reconstitution, store at -20 °C. Reconstituted product may be stored at 2 °C to 8 °C for at least one month. For prolonged storage, freeze in working aliquots at -20 °C. Avoid repeated freezing and thawing.

Product Profile

Recombinant human Stromal Cell-Derived Factor 1 β (SDF-1 β) is measured by its ability to chemoattract human T-lymphocytes cultured in the presence of IL-2 for 8 to 10 days.

The ED₅₀ for this effect is typically 10 to 30 ng/ml.

The ED₅₀ is defined as the effective concentration of growth factor that elicits a 50 % increase in cell growth in a cell based bioassay.

Purity: >97 % as determined by SDS-PAGE, visualized by silver stain.

Endotoxin: <0.1 ng/ μ g determined by the LAL method.

References

1. Shirozu, M. et al., Structure and chromosomal localization of the human stromal cell-derived factor 1 (SDF1) gene. *Genomics*, **28**, 495-500 (1995).
2. Nagasawa, T. et al., Molecular cloning and structure of a pre-B-cell growth-stimulating factor. *Proc. Natl. Acad. Sci. USA*, **91**, 2305-2309 (1994).

3. Tashiro, K. et al., Signal sequence trap: a cloning strategy for secreted proteins and type I membrane proteins. *Science*, **261**, 600-603 (1993).
4. Bleul, C., et al., The lymphocyte chemoattractant SDF-1 is a ligand for LESTR/fusin and blocks HIV-1 entry. *Nature*, **382**, 829-833 (1996).
5. Oberlin, E. et al., The CXC chemokine SDF-1 is the ligand for LESTR/fusin and prevents infection by T-cell-line-adapted HIV-1. *Nature*, **382**, 833-835 (1996).

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